UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/704,039	11/01/2000	Christopher J. Brockett	M61.12-0213	2421

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EXAMINER
SPOONER, LAMONT M

ART UNIT	PAPER NUMBER
2654	

DATE MAILED: 08/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/704,039	BROCKETT ET AL.
	Examiner	Art Unit
	Lamont M Spooner	2654

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _19 April 2004_.

2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-24_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1-24_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on _01 January 2000_ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments with respect to claims 1, 9, 11, and 15 have been

considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Sproat et al., "A Stochastic Finite-State Word-Segmentation Algorithm for Chinese".

Computational Linguistics, vol. 22:3, September 1996 in view of Kanevsky et al. (US

Patent No. 5,835,888 Nov. 10, 1998).

Sproat et al. and Kanevsky et al. are analogous art in that they both involve

information analysis within the linguistic field.

As per **claim 1**, Sproat et al. disclose a word segmentation method comprising:

identifying possible segments in the sequence of characters, at least two of the possible

segments overlapping each other, using a "maximum matching method... one instance

of which [Sproat et al. calls] the `greedy algorithm'" (see method described in pp.

382-384, 393-394); identifying an alternative sequence of characters for at least one of

the possible segments, the alternative sequence of characters forming an alternative

segment by choosing other possible characters that may also form a segment (see

"maximum matching", greedy algorithm description cited above); performing multiple

syntactic analyses using the possible segments and the alternative segment, the

analyses resulting in a full syntactic parse that utilizes and thereby results in a

segmentation of the input sequence of characters (again please refer to the discussion

of "maximum matching", greedy algorithm).

Sproat et al. does not disclose:

identifying an alternative sequence of characters for at least one of the possible

segments, the alternative sequence of characters forming an alternative segment that

fills the same space as one of the possible segments.

However, Kanevsky et al. teaches (Fig. 4 item 412, C.3.lines 36-43) of having

alternative segments that fill the same space as on of a possible segment. Therefore, at

the time of the invention, it would have been obvious to one ordinarily skilled in the art to

combine Sproat et al. with Kanevsky et al. The motivation for doing so would have been

to identify all possible endings in an inflected language during segmentation (C.2.lines

39-41).

As per **claims 2, 3 and 4**, Sproat et al. and Kanevsky et al. disclose a method

according to claim 1, Sproat et al. further discloses:

performing multiple syntactic analyses comprises performing analyses that result

in a parse containing the alternate segment (see description of "maximum matching",

greedy algorithm);

As per **claim 5**, Sproat et al. and Kanevsky et al. disclose a method according to claim 1, Sproat et al. further discloses: wherein: identifying an alternative sequence of characters comprises performing inflectional morphology on a possible segment by including "morphological rules" in order to expand the dictionary used in nonstochastic lexical-knowledge-based word segmentation methods (see Sproat et al., pp. 382-389).

As per **claim 6**, Sproat et al. and Kanevsky et al. disclose a method according to claim 1, Sproat et al. further discloses:

identifying an alternative sequence of characters comprises identifying orthographic variations of a possible segment (Sproat et al., p. 384), a fact elucidated by the discussion of orthographic words in languages such as Chinese, a language in which orthographic words are written with no spaces between them, and orthographic forms are identified through use of a dictionary (Sproat et al., pp. 378-379).

As per **claim 7**, Sproat et al. and Kanevsky et al. disclose a method according to claim 6, Sproat et al. further discloses:

identifying orthographic variations comprises identifying a preferred orthographic form for the possible segment (ibid, via dictionary lookup).

As per **claim 8**, Sproat et al. and Kanevsky et al. disclose a method according to claim 1, Sproat et al. further discloses:

identifying orthographic variations comprises identifying orthographic variants that use a script other than the script of the characters in the possible segment by looking in Roman and other alphabets (see Sproat et al., p. 384, bottom paragraph).

4.   Claims 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over

International Patent WO 98/08169 to Carus et al. in view of Jacquemin et al. (US Patent

No. 6,101,492 Aug. 8, 2000).

Carus et al. and Jacquemin et al. are analogous art in that they both involve

information analysis within the linguistic field.

As per **claim 9**, Carus et al. teach a system for identifying syntax in a string of

characters from a non-segmented language, the system comprising:

a word breaker that generates a collection of words from the string of characters,

the collection of words comprising at least two words that are derived in part from the

same character in the string of characters (see fig. 3, items 60, 62, 64, 76; p. 6,11.

19-33; p. 29,1. 17-p. 30, 1. 9; examples: pp. 32-35), the word breaker utilizing: a lexical

record set (via dictionary lookups) that is used to derive words from the collection of

words by taking the words directly from the string of characters (see p. 3, 1. 23; p. 5,11.

6-18; p. 6,11. 19-33; p. 361. 28-p. 371. 10) through a database analysis module and a

heuristic analysis module and;

a variants constructor that is used to derive word variants of words found in the

string of characters, each word variant being added to the collection of words and

having a different sequence of characters than the sequence of characters associated

with the word in the string of characters from which it is derived (see previous cite,

descriptions of heuristic and database analysis modules; p. 36,1. 14-p. 36, 1. 10; fig. 5,

step 100; fig. 6); and

a syntax parser that performs a syntactic analysis using the collection of words produced by the word breaker to produce a syntax parse; the process outlined in Carus et al. therein comprising a syntax parse which identifies syntactic units of a given corpus per applicant's claim and specification (see fig. 2; p. 9,11. 22-36; p. 10,11. 1-9).

Carus does not disclose:

a variants constructor that is used to derive word variants of words found in the string of characters where the word variants are not found in the string of characters.

However, Jacquemin et al. teaches (C.9.lines 30-35) deriving word variants to a word containing variants of the word not including in the string containing the word. Therefore, at the time of the invention, it would have been obvious to one ordinarily skilled in the art to combine Carus et al. with Jacquemin et al. The motivation for doing so would have been to provide all possible derivatives of a word in order for determining the syntactical structure of a word for further processing (C.4.lines 1-8).

As per **claim 10**, Carus et al. and Jacquemin et al. teach a system according to claim 9, Carus et al. further discloses:

the variants constructor comprises inflectional morphology rules (see previous site under variants constructor, claim 9).

As per **claim 11**, Carus et al. and Jacquemin et al. disclose the teachings of claim 10, on which claim 11 depends (see cite in claim 10 rejection above).

Carus et al. fail to explicitly teach inflectional morphology rules that are capable of identifying a word's lemma from its inflectional form in the string of characters.

However, Jacquemin et al. disclose inflectional morphology rules that can identify a word's stem from inflectional morphology rules (C.4.lines 57-61). At the time of the invention, it would have been obvious for one skilled in the art to modify Carus et al. to include inflectional morphology rules capable of identifying a word's stem from an inflectional form because Jacquemin et al. teach the use of inflectional morphology (C.4.lines 57-61) rules in order to better disambiguate information, as for use in further syntactical analysis (C.5.lines 19-32).

As per **claim 12**, Carus et al. and Jacquemin et al. teach a system according to claim 9, Carus et al. further discloses:

the variants constructor comprises an orthographic variants structure that indicates the orthographic variants of words found in the string of characters (see previous cites in claim 9 regarding the lexical record set and variants constructor), a dictionary being used to check character orthography.

As per **claim 13**, Carus et al. and Jacquemin et al. teach a system according to claim 9, Carus et al. further discloses:

at least one word variant has a different number of characters than the word from which it is derived, the variants constructor disclosed in Carus necessarily creating a variant with a different number of characters (see previous cite in claim 9 regarding variants constructor).

As per **claim 14**, Carus et al. and Jacquemin et al. teach a system according to claim 9, Carus et al. further discloses:

at least one word variant includes a character that is not present in the string of

characters, the variants constructor disclosed in Carus necessarily creating a variant

with alternate characters (see previous cite in claim 9 regarding variants constructor).

5.   Claims 15-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Carus et al. in view of Jacquemin et al., further in view of Sproat et al, and further in

view of Kanevsky et al.

As per claims **15-24**, Carus et al., Sproat et al., Jacquemin et al. and Kanevsky et

al. disclose methods according to claims 1-14.

Carus et al., Jacquemin et al. Kanevsky et al. and Sproat et al. do not specifically

disclose a computer system and a computer-readable medium to execute said

methods.

At the time of invention, it would have been obvious to one skilled in the art to

modify Carus et al., Jacquemin et al., Kanevsky et al. and Sproat et al. to include a

computer system to execute the disclosed methods and a computer-readable medium

coupled to said system; such modification is implicit in the assumptions and spirit of

both inventions. Such a modification would have been obvious in order to execute said

methods, update the method and executable code, provide read-write storage for the

executable code and data, evaluate its performance, and incorporate the system and

media into a product.

Conclusion

6.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Lamont M Spooner whose telephone number is

703/305-8661. The examiner can normally be reached on 8:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Nguyen Vo can be reached on 703/308-6728. The fax phone number for

the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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lms
08/09/2004

PATRICK N. EDOUARD
PRIMARY EXAMINER